

U.S. Patent Application Serial No. 09/957,400
Amendment dated September 2, 2003
Reply to Office Action of **June 6, 2003**

REMARKS

Applicant has amended the claims to clarify the present invention. As now presented, independent Claim 1 is to an engine muffler that has a sound absorbing material interposed between an internal tube and an external tube, with a projection projecting toward the sound absorbing material formed on the external tube along almost the entire periphery, the projection spaced from the internal tube. Independent Claim 6 is to a method for forming the muffler with the steps of interposing a sound absorbing material, having a multilayered plurality of kinds of sound absorbing materials having different heat resisting properties and sound absorbing capabilities, between an internal tube and an external tube and drawing the end of the external tube. A projection, projecting toward the sound absorbing material is formed on the external tube along almost the entire periphery thereof, the projection spaced from the internal tube, after inserting the sound absorbing material between the internal tube and the external tube but before drawing the end of the external tube. Such a muffler and method of forming a muffler are not taught or suggested in the prior art.

Applicant's claims have been rejected as obvious under 35 U.S.C. §103(a) in view of a combination of Flugger (U.S. 5,892,186) and Heath (U.S. 3,863,445), or in view of those two references when combined with Morikawa (U.S. 6,223,434). Reconsideration and removal of those rejections are respectfully requested in view of the present amendments to the claims and the following remarks.

In the present Office Action, as in the previous Office Action, Flugger is cited to show an engine muffler (10) comprising a sound absorbing material (20) between an internal tube and external tube. It is admitted in the Office Action that no projection, projecting towards the sound absorbing material is shown.

Heath is alleged to show an engine muffler having a projection (107), projecting towards the inside, formed on an external element (103), that "could be" along almost the entire periphery thereof.

Initially, Applicant would point out that Heath does not relate to an engine muffler but rather to heat shields or external baffles attached to hot portions of conduits in catalytic emission control exhaust systems to protect the surrounding environment and dissipate heat.

With respect to Fig. 4 of Heath, referred to in the Office Action, the external element (103) is a semi-circular upper imperforate plate that fits inside a channel shaped lower plate (105). Only the lower plate (105) has undulations or projections (107). This is contrary to the present claimed muffler where an internal tube is within an external tube, with projections on the external tube. In addition, the Heath undulations or projections (107), disposed only on the lower element (105), do not extend along almost the entire periphery of any external tube as required in the present claims. While the Office Action alleges that projections (107) "could be" along almost the entire periphery, such is not taught or suggested in the reference and mere speculation does not meet the criteria for rejection of the claims.

In addition, the corrugation (107) of Heath provide support for the tailpipe (11) and provide a heat sink mass of metal for dissipation of exhaust heat, such that the projections (107) must contact the tailpipe (11).

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In the present claimed muffler, the projection of the external tube needs to be spaced from and not contact the inner tube, so as to absorb sound. Should the projection of the external tube contact the inner tube, sound from the exhaust pipe would not be absorbed. Claims 1 and 6 have been amended to provide that the projection is on the external tube and is spaced from the internal tube to further point out this distinction.

The Morikawa reference is applied to show use of different sound absorbing material and does not provide the deficiencies of the Flugger-Heath combination.

The Office Action rejects the method claims by alleging that the order in which the process is done is a "designer choice." There is no support for this allegation. As mentioned at page 8, line 24 through page 9, line 9 of the present specification; by forming the projection after inserting the sound absorbing material between the internal and external tubes but before drawing the ends, slippage or wrinkles at the mating portion of the sound absorbing material are prevented. The sequence of steps is thus not a mere designer choice, where the method can prevent slippage or wrinkles at the mating portion of the sound absorbing material, by forming the projection after inserting the sound absorbing material between the internal and external tubes but before drawing the ends. The particular steps claimed provide benefits not taught or suggested in the cited art. Claim 6 has been amended to provide that the sound absorbing material is a particular multilayered material and further that the projection formed on the external tube is spaced from the internal tube, which combination of features is not taught in the art.

In view of the present amendments to the claims, and the above remarks, Applicants claims 1-8 are believed to be patentable and early action towards allowance thereof is respectfully requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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